CLAIMS

What is claimed is:

1. A system that facilitates data compression, comprising:

a component that receives an N-dimensional image, where N is any integer from one to infinity; and

a compression component that utilizes, at least in part, locally-adaptive, lossless palettization to facilitate compression of the N-dimensional image.

2. The system of claim 1, the N-dimensional image comprising a two-dimensional image.

3. The system of claim 1, the compression component employing the locally-adaptive, lossless palettization when characteristics of image data related to the N-dimensional image are equal to or below a threshold value.

4. The system of claim 3, the characteristics of the image data comprising at least one selected from the group consisting of pixel colors and pixel grayscales.

5. The system of claim 4, the threshold value comprising a maximum number of at least one selected from the group consisting of pixel colors and pixel grayscales.

6. The system of claim 1, the compression component optimizing compression of the N-dimensional image by ordering indices representative of image data and reducing indices bit counts as values of indices decrease.

7. The system of claim 1, the compression component further utilizing a one-dimensional compression technique to further compress the N-dimensional image.

8. The system of claim 7, the one-dimensional technique comprising at least one selected from the group consisting of LZ77 compression and LZ78 compression.

9. The system of claim 1, the locally-adaptive, lossless palettization comprising, at least in part, splitting the N-dimensional image into macroblocks.

10. The system of claim 9, the locally-adaptive, lossless palettization further comprising, at least in part, further splitting the macroblocks to facilitate compression.

11. The system of claim 1, the locally-adaptive, lossless palettization further comprising a last recently used (LRU) buffer for indexing image data.

12. The system of claim 11, the LRU buffer maintains image data in relative order to facilitate further compression.

13. The system of claim 1, the locally-adaptive, lossless palettization comprising dynamic, locally-adaptive, palettization.

14. A method for facilitating data compression, comprising:

receiving an N-dimensional image, where N is any integer from one to infinity; and

utilizing, at least in part, locally-adaptive, lossless palettization to facilitate compression of the N-dimensional image.

15. The method of claim 14, the N-dimensional image comprising a two-dimensional image.

16. The method of claim 14, further comprising:

compressing an output of the locally-adaptive, lossless palettization utilizing a one-dimensional technique to further reduce redundancies.

17. The method of claim 16, the one-dimensional technique comprising at least one selected from the group consisting of LZ77 compression and LZ78 compression.

18. The method of claim 14, the locally-adaptive, lossless palettization comprising:

initializing an *L* size last recently used (LRU) buffer;

splitting the N-dimensional image into M x O size macroblocks, where M and O each represent any integer from one to infinity;

checking each macroblock line-by-line and pixel-by-pixel;

setting masking bits if a line matches a previous line;

setting masking bits if a pixel matches a previous pixel;

creating a list of all pixel characteristics utilized in non-matching macroblock lines;

encoding macroblock lines "as is" if pixel characteristics in non-matching macroblock lines is greater than a threshold value related to the pixel characteristics;

encoding a list of used pixel characteristics utilizing, if possible, an index value from the LRU buffer instead of actual characteristic encoding;

encoding a sequence of all pixels from non-matching macroblock lines by substituting pixel characteristics with its index value from the list of used pixel characteristics; and

adding pixel characteristics from the list of used pixel characteristics to the LRU buffer.

19. The method of claim 18, further comprising:

ordering index values representative of the pixel characteristics from the non-matching macroblock lines in descending order of value; and

transmitting the index values, in order, utilizing a reduced set of representation bits derived from, at least in part, a total number of index values for a macroblock, a number of previously transmitted index values, and a value of a last index transmitted.

20. The method of claim 19, the reduced set of representation bits utilizing a bit count determined by:

$$\text{bit count} = \log_2(n + m - k + 1) \qquad \text{Eq. (4)}$$

where n is the value of the last index transmitted, m is the number of previously transmitted index values, and k is the total number of index values for the macroblock.

21. The method of claim 18, the pixel characteristics comprising at least one selected from the group consisting of pixel colors and pixel grayscales.

22. The method of claim 18, further comprising:
grouping like information to facilitate additional compression.

23. The method of claim 22, the like information comprising at least one selected from the group consisting of sequences of line bits, sequences of macroblock colors, and encoded macroblocks.

24. The method of claim 18, further comprising:
ordering encoded data to facilitate additional compression.

25. The method of claim 24, ordering encoded data comprising sequencing index values from greater to lesser values such that each successive transmission of information requires fewer bits to be transmitted.

26. The method of claim 18, the M x O size macroblocks comprising 8 x 32 pixel size macroblocks.

27. The method of claim 18, the L size LRU buffer comprising a 256 pixel size LRU buffer.

28. The method of claim 18, the threshold value comprising a value of approximately 16.

29. A system that facilitates data compression, comprising:

means for obtaining an N-dimensional image; and

means for utilizing, at least in part, locally-adaptive, lossless palettization to facilitate in compressing the N-dimensional image.

30. A data packet transmitted between two or more computer components that facilitates image compression, the data packet comprising, at least in part, information relating to an image compression system that utilizes, at least in part, locally-adaptive, lossless palettization to facilitate image compression.

31. A computer readable medium having stored thereon computer executable components of the system of claim 1.

32. A device employing the method of claim 14 comprising at least one selected from the group consisting of a computer, a server, and a handheld electronic device.

33. A device employing the system of claim 1 comprising at least one selected from the group consisting of a computer, a server, and a handheld electronic device.